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ABSTRACT

This paper briefly outlines and explains critical characteristics of the most important and frequently used government contract classes. These classes are explored in terms of contract (and government) behaviors expected to ensue based on simple analysis of where payoffs and rewards are, monetarily and otherwise, and in terms of how these behaviors and constraints affect costs. The two major contract categories examined are fixed-price contracts, which place the greatest responsibility for controlling costs on the contractor, and cost-reimbursement contracts, which place the greatest responsibility for limiting costs on the government. The advantages and disadvantages to the government and the contractor are examined for certain contract variants: (1) fixed-price contract variants (firm-fixed-price-type contracts and other fixed-price contracts) and (2) cost-reimbursement contract variants (cost-reimbursement-type contracts, cost plus fixed fee, such as term form and completion form, cost plus incentive fee, cost plus award fee, cost contracts, and cost-sharing contracts. A general discussion of the contingencies inherent in the contract types is provided. (CSS)

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AN ANALYSIS OF GOVERNMENT TRAINING CONTRACT PRACTICES IN TERMS OF COST AND CONTINGENCY MANAGEMENT IMPLICATIONS

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The importance and influence of government contracting practices and requirements on military training development and costs is not well understood by many, including in many cases, unfortunately, the government and its procurement agencies. This paper will briefly outline and explain the critical characteristics of the most important and frequently used contract classes and will then analyze them from the perspective of cost influences and as contingency management systems. In other words, it will explore them in terms of the types of contract (and government) behaviors which would be expected to ensue based on a simple analysis of where the payoffs and rewards are, both monetarily and otherwise, and in terms of how these behaviors and constraints affect costs. As will be seen, sometimes the type of contract potentially acts to the considerable detriment of either the government, the contractor, or both.

For purposes of our discussion, we will look at the most common classes of contracts awarded by the government in most training research and development (R&D) projects. The Federal government uses two major contract categories:

(1) Fixed-Price contracts, which place the greatest responsibility for controlling costs on the contractor; and

(2) Cost-Reimbursement contracts, which place the greatest responsibility for limiting cost on the government.

Each of these contracts and their variants has certain advantages and disadvantages to both the government and the contractor. These advantages and disadvantages, predictably enough, tend to encourage certain types of behavior and activity on the part of each. In many cases, this behavior can have serious implications regarding the probability of the work fulfilling the real intent and goals stated in the RFP and promised in the winning proposals.

Within these two general categories, a variety of contract subcategories have developed over time. The most common of these is the "firm fixed-priced" contract. This type must always be used unless another kind is shown to be of more benefit to the government. The next few paragraphs outline the various common types of fixed-price contracts.

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Firm Fixed-Price Type Contracts

This contract type is applicable when a fair and reasonable price can be established at the time of contract award. It also requires that firm, reasonable design and performance specifications for the work to be performed exist; that adequate competition is present; and that reliable cost and pricing data is available for reasonable price comparisons during bid evaluation.

Generally, this contract is looked at as being preferable over all other contract types for the government (largely because of the low administrative requirement), if it is possible to write clear, objective, unambiguous DIDs and SPECs. If this is not possible, the legalistic nitpicking, which may ensue can be very costly.

Other Fixed-Price Contracts

Variations on the firm fixed-price contract have evolved to accommodate unstable market and labor conditions. (Fixed-Price with Economic Adjustment Factors); to allow increased profit incentive should costs be reduced or performance increased (Fixed-Price with Incentive); or when the work and realistic price to do the work can be negotiated initially but it is not possible to assess work performance on a later period of performance (Fixed-Price with Redetermination).

Term Training Extension Course (TEC) contracts for the U.S. Army, for the most part, are of the Firm Fixed-Price contract type.

Cost-Reimbursement Type Contracts

These contract types are normally used for research and development efforts funded totally by the government or jointly by contractor and the government. There are six major subtypes: Cost Plus Fixed Fee (term and completion); Cost Plus Award Fee; Cost Plus Incentive Fee; Cost Sharing; and Cost Contracts. A brief explanation of each follows.

Cost Plus Fixed Fee (CPFF)

There are two (2) forms of CPFF contracts, Term Form and Completion Form.

In general, CPFF contracts apply the least pressure on the contractor in terms of responsibility for costs, and from this standpoint alone, are the least preferred contract types for the government. The contractor must have an adequate accounting system which is auditable by the government upon request.

a. Term Form

This form is generally used for research efforts, preliminary exploration, or study when the level of effort is initially unknown. It can be used for development and test efforts when a Cost Plus Incentive Fee contract is determined to be impractical.

b. Completion Form

This form is applicable for research or other development efforts when the work can be clearly defined, a definite goal is expressed, and a specific deliverable required.

Cost Plus Incentive Fee (CPIF)

These contracts are generally used for development and test efforts when a profit incentive could provide positive motivation for effective, efficient management. Usually, an attempt to tie the incentive to cost, schedule, and performance is made in these types of contracts. Again, the contractor must have an adequate system to account for cost. A target cost, a target minimum and maximum fee and an adjustment formula for fee are built into these contracts.

Cost Plus Award Fee (CPAF)

This type of contract is most appropriate when the general feasibility of the work is established, but measurement of performance must be by subjective evaluation. CPAF contracts do not apply for procurement of big systems categorized as either engineering development or operational system development efforts. Final fee is determined by the government and is not subject to contractor dispute.

Cost Contracts

These contracts are normally used for R&D with nonprofit organizations, educational institutions, or facilities contractors. The contractor gets costs but no fee.

Cost Sharing Contracts

Again, these contracts generally are for R&D projects and are jointly sponsored by the government and the contractor. Generally, the contractor expects commercial benefit in lieu of fee as consideration. The government pays a portion of cost but no fee.

The rationale for cost sharing derives from the attitude that support of research is philosophically different from procurement of research. In procurement, the government is guided by the principle that it is prepared to pay the full cost at fair market value of any item it purchases to fulfill its needs and goals. In support, the relation between government agencies and private research performers is presumed to include a mutuality of interest that warrants sharing the costs of such research.

DISCUSSION OF THE CONTINGENCIES INHERENT IN THE CONTRACT TYPES

The first class of contract incentive model we will discuss is the Cost Reimbursement Contract (CRC). CRCs are often utilized for R&D efforts, including training, in which it is anticipated that all of the variables are not fully understood prior to starting work. CRCs are usually written according to more or less loose specifications which may change as further information is acquired during the course of the contract. In CRCs, the contractor promises to do the work described, attempting to meet the cost parameters he/she has spelled out, usually for a fee. In essence, the contractor and contracting officer, or the government, enter into a joint venture, the government saying that it trusts the contractor's ability to perform the analysis and provide the data as necessary to make decisions once the contract gets underway. The contract says, in essence, that the contracting company is willing to provide the resources necessary to do the work as understood at the time of award and any additional work which may be required within the scope of the contract specification, as long as the government is willing to cover these costs and provide the fee.

An advantage to the contractor is that his/her risk is minimized, since unforeseen implications of the work which are deemed to be within the scope of the original specifications will either be covered by the government or not required. Unfortunately, a major disadvantage of this type of contract lies not in the contract itself, but in the prevailing contracting circumstances which conspire in most cases to prevent the contract from working the way it is supposed to. The supposed advantage of CRCs is their flexibility in meeting unforeseen circumstances. In most training situations, however, there are real cost constraints based on the original estimate of cost which make it difficult for the contracting officer to flexibly meet new circumstances and cover the cost of changes in the "within scope" work encountered along the way. The money just isn't there. Therefore, difficult compromises must be made and, in many cases, the final product is less than it should be since some needed work could not be done within the confines of the real-world cost limitations.

However, of all the contract types, CRCs probably generate the most cordial, constructive, and mutually supportive government-contractor relationship. An exception to this is when the contractor deliberately "low-balls," that is, underbids the level of effort in anticipation of "discovering" change of scope or changes in "within scope" work requirements along the way, which will allow the contractor to balloon the contract to a much larger level of effort once the contract has been won.

The second major class of contracts, Fixed Price contracts, are basically contracts let to a contractor who has been successful in bidding to a very tight specification provided by the contracting agency. As its name implies, essentially a Fixed Price contract is an agreement for the contractor to perform certain very tightly specified work for a guaranteed price. Unforeseen circumstances, miscalculations by the contractor, and so on, which lead to increased costs, are the liability of the contractor.

The advantage to the government in this type of contract is that at the time it awards, it knows basically what it is going to have to pay, and thereby is willing to pay a slightly higher fee in compensation for the contractor's risk. The advantage to the contractor is that he/she may capitalize on any technological or procedural advantages to which he/she may have access over the competition and thereby gain maximum profit leverage.

The disadvantage to the contractor, of course, lies in the increased risk. Success or failure, economically as well as technically, depends upon understanding of the problem and the statement of work in the RFP. "Inside information" is very valuable. A disadvantage to the government is that the risk involved might cause certain firms, such as small, high-technology firms with relatively limited resources, to shy away from bidding because they cannot afford the risk.

In some cases, there may be a definite advantage in a fixed price environment to larger firms who may be prepared to bid on the contract, perhaps even accepting it as a loss leader in order to get their foot in the door for subsequent higher level of effort activities. A major disadvantage to both the government and the contractor is that the economic constraints of a Fixed Price contract can tend to act on both the contractor and the government in such a way as to generate closer attention to contracting details. Therefore, Fixed Price contracts can generate a great deal of nitpicking and legalistic behavior on both sides, which tend to make the administration of such contracts more expensive and punishing to both the contracting agency and to the contractor. If, however, the DIDs and SPECs can be written clearly and unambiguously, this contract is one of the easiest to administer.

An important variant, the Componentized Fixed Price contract, is a contract in which the elements of work are separately costed and contracted for to a fine level of detail. In the aggregate, the separate components make up the products of a systematic R&D effort. One of the advantages of this contract is directly related to the Government's level of understanding of the work being procured. If the government has a good handle on all the parameters of the effort, it can predict its needs very closely. Under these conditions this contract has the advantages of Fixed Price contracting. However, if the Government has miscalculated, this can quickly turn into a disadvantage. For example, if the government has underestimated the number of any contract component it will require, or has miscalculated the ratio of some types of effort versus others within the contract confines, it may be that the amount of money initially thought sufficient to accommodate the work requirement is now significantly inadequate.

Even more important in this contract is the requirement for tight security surrounding the proposal evauation process itself. In large contracts, such as those used for procuring master training kits within the TEC program, there may be literally hundreds of discrete components to be costed and used. In some cases, the government has been forced, due to time and manpower constraints, to evaluate cost proposals utilizing a sampling technique whereby certain components considered key to the effort are compared across all bids, while others are ignored. If a contractor should guess correctly, or somehow obtain information on which components are to be costed, it is possible for the contractor to bid as low as possible (even to the point of sustaining loss) on those components, in order to look good on the evaluation, while costs are regained by increasing the price of other components which will not be compared on the evaluator, but which will be purchased under the resulting contract. As a result, this kind of contract has recently been contested by losing bidders who are not loath to challenge what they consider to be unrealistic price structures on any set of components. In the TEC environment, for example, it is becoming increasingly difficult to successfully let this type of contract as the qualified bidders become more militant and contract wise.

Another disadvantage of componentized Fixed Price is that, for example in the TEC environment, some components may actually be conditional upon "negative" contract performance. In TEC, the contingencies could relegate against the contractor turning out the best work on the first attempt in the hope that the technical review process is unable to detect the sometimes subtle inadequacies. Prices for first, second, even third revisions of a page of text output in many cases would make it advantageous for a contractor to do less than the best effort on the first attempt. After all, any page or set of pages which are accepted on the first attempt not only may have cost more for the contractor to produce due to the greater care and instructional design, development, and editing which went into them, but they

effectively preclude the contractor from picking up what may be easy profits on often trivial revisions. This is not to suggest that any contractor (and Courseware is a TEC contractor) would yield to this temptation, but to a psychologist, the behavior one would predict from this contingency structure would obviously be a behavior which would be detrimental to the government's interest.

In addition, in any set of complex component pricings, the contractor will stand to make more money (due to technological or other advantages unique to his corporate situation) on some components than on others. Therefore, there would seem to be strong motivation for the contractor to exert whatever influence is possible on increasing the frequency of application of certain components and decreasing others. Notice that behaviors generated by this contingency are independent of any instructional requirements or real-world needs of the client.

An important variant in any contracting setting is one which recognizes the powerful contingency management potentials of unique contract circumstances and which attempts to harness them. Worth special mention in this case are the Cost Plus Incentive Fee (CPIF) and Fixed Price with Incentive (FPI) contract types. In either of these cases, the contractor would seem to be powerfully motivated to reduce costs, since there is a fee incentive to do so. Do not automatically assume this mechanism is dominant in a given case, however. The contractor may have corporate overhead commitments to meet which make reduction of volume on a given contract (even with some fee increase) undesirable. Similarly, the "storage" of a key employee in a contract position longer than necessary, even at risk of losing the fee incentive, may be the dominant contingency to a contractor in a given situation. Similarly, on the government side, there is often slight, if any, inducement to underspend a budget, as any contractor can attest who has experienced the almost magical availability of hitherto absent funds towards the end of any fiscal year.

This paper attempts to mention a few of the typical factors to be considered in contracting situations. It barely scratches the surface of those things which might profitably be taken into consideration. The authors suggest that what is really needed is a well documented and detailed analytical procedure with appropriate job aids. This could be used, where degrees of freedom exist, to aid decision makers in analyzing contract situations and selecting optimal contract types for award. It could also be used in initial training or on-going job support for government contracting officers, and technical representatives. The important point being made in this paper is that contracts should not be analyzed and selected on the basis of legal or superficial economic issues alone. The psychological implications of each contract type in each contractor-task setting can have profound implications.

There may be no such thing as a perfect contract. Let's hope that this brief discussion has shed some light on a few of the important advantages and disadvantages of the most prevalent classes of government contracts utilized in training R&D. It should be obvious that the best defenses against the inherent disadvantages of any of these classes of contracts are knowledge and communication. To the extent that both the contractor and the Government understand the work to be done and agree on its procedural and product specifications the potential for either government or contractor loss is minimized. It is hoped the emerging instructional and training technology will contribute significantly to minimizing these problems through application of training analysis and evaluation technologies to contract analysis and evaluation problems.